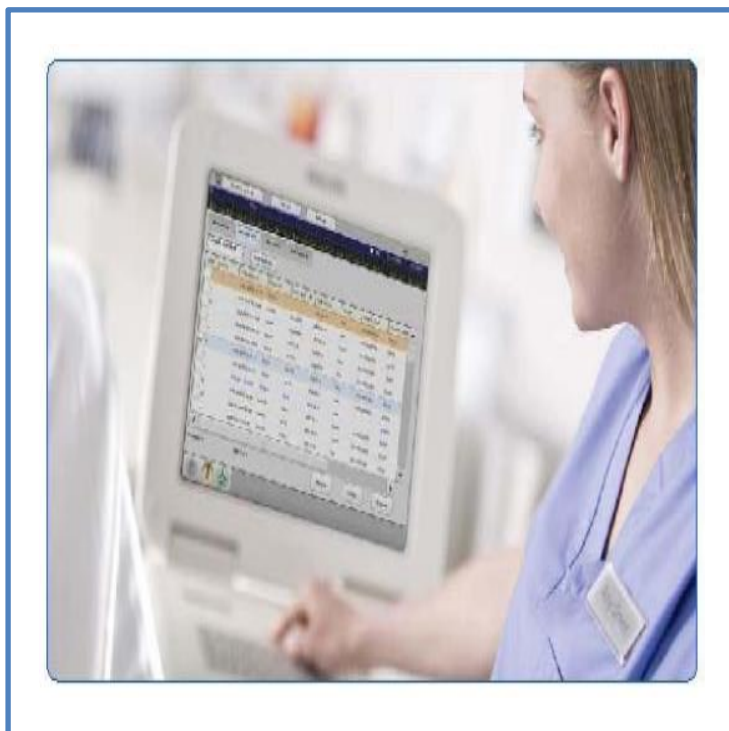


# DICOM Conformance Statement

## *PageWriter TC35 1.0*



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## 1. DICOM Conformance Statement Overview

The PageWriter TC35 implements the necessary DICOM services to: (1) search and retrieve worklists (lists of orders) from information systems, (2) Start acquisition of Worklist item, acquire images and complete acquisition and finalize MPPS, (3) save ECG waveform objects to network storage system & (4) commit objects to storage systems.

Below Table provides an overview of the network services supported by PageWriter TCs.

**Table 1: Network Services**

SOP Class		User of Service (SCU)	Provider of Service (SCP)	Display
Name	UID			
<b>Transfer</b>				
12-Lead ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	No	N/A
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	No	N/A
Encapsulated PDF Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1	Yes	No	N/A
<b>Workflow Management</b>				
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No	N/A
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No	N/A
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No	N/A

PageWriter TCs do not support any DICOM media services.

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## 3. Introduction

The introduction specifies product and relevant disclaimers as well as any general information that the vendor feels is appropriate.

### 3.1. Revision History

The revision history provides dates and differences of the different releases.

**Table 2: Revision History**

Document Version	Date of Issue	Description of change
01	25-JAN-2022	First release of TC35 1.0

### 3.2. Audience

This Conformance Statement is intended for:

- (Potential) customers
- System integrators of medical equipment
- Marketing staff interested in system functionality
- Software designers implementing DICOM interfaces

It is assumed that the reader is familiar with the DICOM standard.

### 3.3. Remarks

The DICOM Conformance Statement is contained in chapter 4 through 8 and follows the contents and structuring requirements of DICOM PS 3.2.

This DICOM Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

- **Interoperability**  
Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into an IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.  
It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.
- **Validation**  
Philips equipment has been carefully tested to ensure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.  
Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.
- **New versions of the DICOM Standard**  
The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery. The user should ensure that any non-Philips provider linking to Philips equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

## 3.4. Definitions, Terms and Abbreviations

**Table 3: Definitions, Terms and Abbreviations**

Abbreviation/Term	Explanation
AE	Application Entity
ANSI	American National Standard Institute
AP	Application Profile
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
ECG	Electrocardiogram
EBE	DICOM Explicit VR Big Endian
ELE	DICOM Explicit VR Little Endian
ILE	DICOM Implicit VR Little Endian
IOD	Information Object Definition
ISIS	Information System - Imaging System
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
RWA	Real-World Activity
SCM	Study Component Management
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
WLM	Worklist Management

## 3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 1 - 22 (NEMA PS 3.1- PS 3.22),  
 National Electrical Manufacturers Association  
 1300 North 17th Street  
 Suite 900  
 Arlington, Virginia 22209  
 Internet: <https://www.dicomstandard.org/current>

Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2020) plus all the supplements and correction items that have been approved as Final Text.

## 4. Networking

### 4.1. Implementation model

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the Application Entities and the "external world" or Real-World Activities,
- A functional description of each Application Entity, and
- The sequencing constraints among them.

#### 4.1.1. Application Data Flow

The operator of a PageWriter TC35 electrocardiograph initiates a Modality Worklist query when an up-to-date list is needed. This, in turn, causes a Modality Worklist query to the configured Modality Worklist SCP. One Work item is then selected from the Modality Worklist and the acquisition is started thus creating MPPS. After acquiring the images, acquisition is completed and MPPS is finalized.

When one or more ECGs have been acquired, the operator of a PageWriter TC35 electrocardiograph initiates a single or batch ECG transmission. This, in turn, causes one or more 12-lead or General ECG Waveform objects or Encapsulated PDF Storage objects to be stored into the configured Storage SCP. If the Storage SCP is configured as an archive device the PageWriter will request Storage Commitment and if a commitment is successfully obtained will record this information in local database.

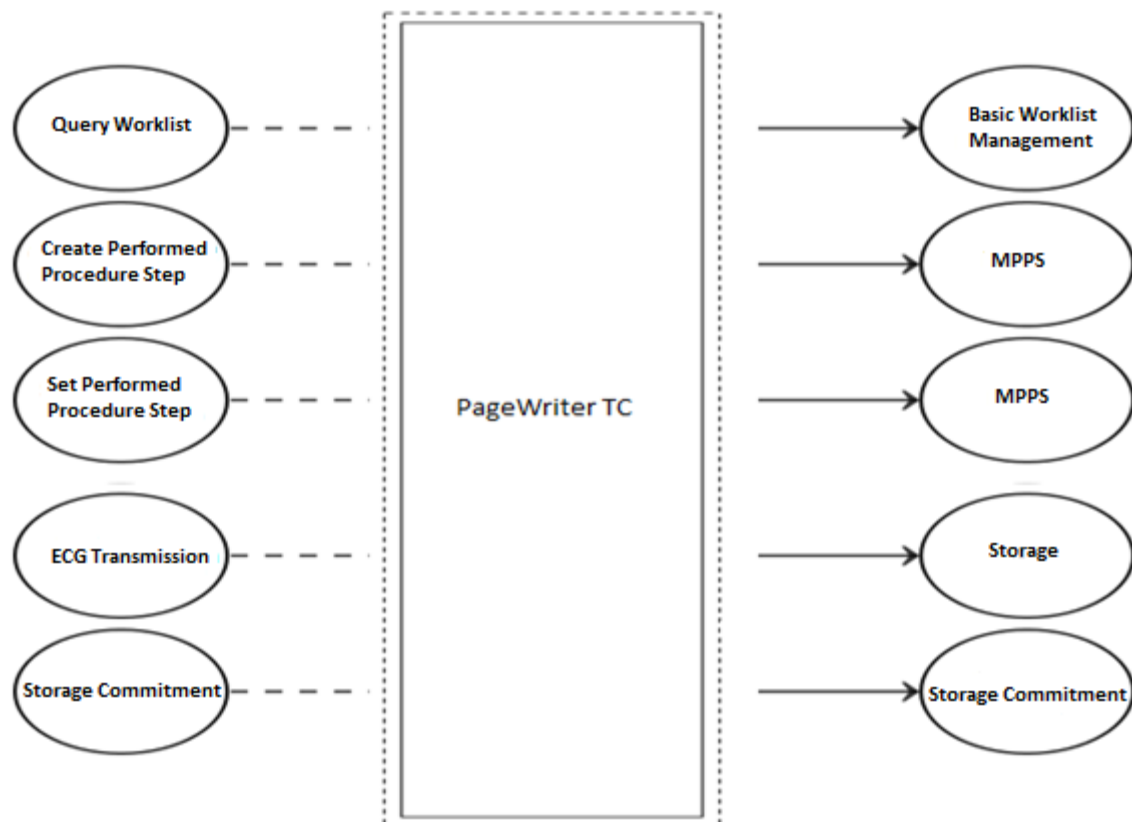


Figure 1: Application Data Flow Diagram



## 4.1.2. Functional Definition of AE's

### 4.1.2.1. Functional Definition of ECG Storage Application Entity

After acquiring one or more ECGs, the operator can initiate a single or batch transmission of ECGs. This causes the PageWriter TC35 cardiograph to store each ECG into the configured storage SCP. Each ECG is stored as a 12-lead or General ECG Waveform object or Encapsulated PDF Storage Object.

### 4.1.2.2. Functional Definition of Worklist Application Entity

The operator of a PageWriter TC35 cardiograph can choose to retrieve an up-to-date worklist to the cardiograph. The operator can either initiate this function on the Worklist GUI to retrieve the whole list, or specify query filters on the Find Patient GUI, and the Modality Worklist service provider is queried for the Modality Worklist. The returned list of work items is listed on the cardiograph. One Work item is then selected from the Modality Worklist and the acquisition is started thus creating MPPS. After acquiring the images, acquisition is completed and MPPS is finalized.

## 4.1.3. Sequencing of Real-World Activities

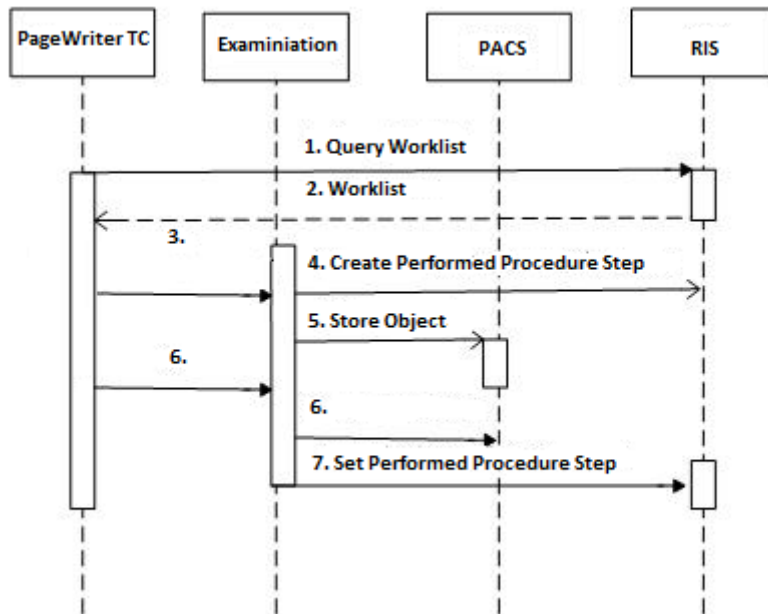


Figure 2: Sequence of Real World Activities

## 4.2. AE Specifications

This section in the DICOM Conformance Statement is a set of Application Entity specifications. There are as many of these subsections as there are different AE's in the implementation.

## 4.2.1. Modality Worklist AE

Detail of this specific Application Entity is specified in this section.

### 4.2.1.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 4: SOP Classes for Worklist Application Entity**

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.1.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.1.2.1. General

The DICOM standard application context is specified below.

**Table 5: DICOM Application Context**

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

#### 4.2.1.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator is specified here.

**Table 6: Number of associations as an Association Initiator for this AE**

Description	Value
Maximum number of simultaneous associations	1

#### 4.2.1.2.3. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 7: DICOM Implementation Class and Version for Worklist Application Entity**

Implementation Class UID	1.3.46.670589.32.860437.1.0.0
Implementation Version Name	TC35DCM_1_0_0

## 4.2.1.2.4. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 8: Communication Failure Behavior**

Exception	Behavior
Timeout	Association released gracefully and reason is logged.

## 4.2.1.3. Association Initiation Policy

The behavior of this Application Entity is summarized in the next Table.

**Table 9: Response Status Handler Behavior**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful Operation	Association established with the SCP system.
*	Any other status	Unsuccessful Operation	Association not established with the SCP System and reason is logged.

The Application Entity will respond to a received Association rejection as shown in the next table.

**Table 10: Association Rejection response**

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - application-context-name-not supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		3 - calling-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		7 - called-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
2 - local-limit-exceeded		When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - application-context-name-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		3 - calling-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		7 - called-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".

Result	Source	Reason/Diagnosis	Behavior
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error"
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error"
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error"
		2 - local-limit-exceeded	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error"

The behavior of the AE on receiving an Association abort is summarized in the next table.

**Table 11: Association Abort Handling**

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	1 - unrecognized-PDU	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	2 - unexpected-PDU	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	4 - unrecognized-PDU-parameter	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	5 - unexpected-PDU-parameter	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	6 - invalid-PDU-parameter-value	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".

## 4.2.1.3.1. (Real-World) Activity – Modality Worklist as SCU

### 4.2.1.3.1.1. Description and Sequencing of Activities

The operator of the PageWriter TC35 can choose to retrieve an up-to-date worklist. To initiate this function, the operator will run a query (patient based query or broad query) from the cardiograph, with or without optional search criteria. When the operator starts the query process, the PageWriter TC35 will query the DICOM Modality Worklist service provider for the Modality Worklist, using the search criteria if provided. The list of orders is returned to the cardiograph (Max.200) and displayed to the operator.

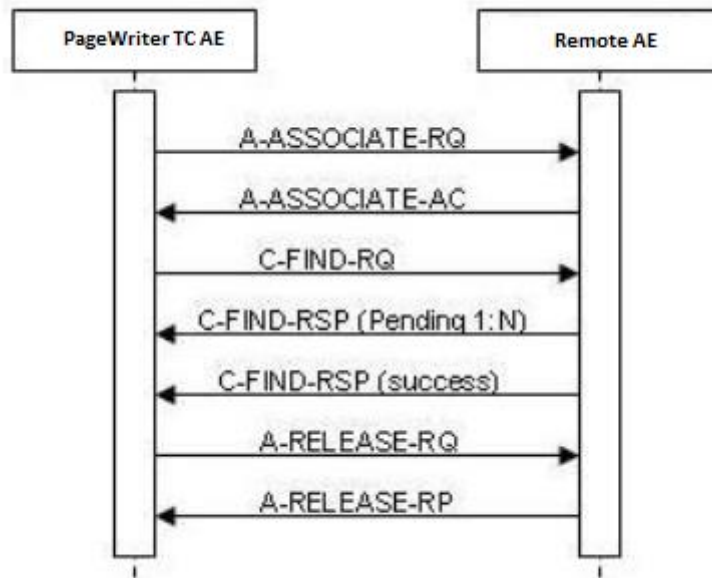


Figure 3: Modality Worklist as SCU

### 4.2.1.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 12: Proposed Presentation Contexts for (Real-World) Activity – Modality worklist As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

## 4.2.1.3.1.3. SOP Specific Conformance for Modality Worklist Information Model - FIND SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

### 4.2.1.3.1.3.1. Dataset Specific Conformance for Modality Worklist Information Model - FIND SOP Class C-FIND-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

The table below should be read as follows:

Attribute Name:	Attributes supported to build a Modality Worklist Request Identifier.
Tag:	DICOM tag for this attribute.
VR:	DICOM VR for this attribute.
M:	Matching Keys for (automatic) Worklist Update.
R:	Return Keys. An "X" will indicate that this attribute as matching key can be used.
Q:	Interactive Query Key. An "X" will indicate that this attribute as matching key can be used.
D:	Displayed Keys. An "X" indicates that this Worklist attribute is displayed o the user during a patient registration dialog.
IOD:	An "X" indicates that this Worklist attribute is included into all object Instances created during performance of the related Procedure Step.
Type of matching:	The following types of matching exists: Single Value Matching List of UID Matching Wild Card Matching Range Matching Sequence Matching Universal Matching

**Table 13: Worklist Request Identifier**

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
<b>Module : SOP Common</b>									
Specific Character Set	0008,0005			X				Universal	
<b>Module: Scheduled Procedure Step Module (M)</b>									
Scheduled Procedure Step Sequence	0040,0100	SQ	X	X				Universal	
>Modality	0008,0060	CS	X	X	X		X	Single	"ECG"
>Scheduled Station AE Title	0040,0001	AE	X	X	X			Universal	
>Scheduled Procedure Step Start Date	0040,0002	DA	X	X	X	X		Range, Universal	"Order Request" is displayed on UI.
>Scheduled Procedure Step Start Time	0040,0003	TM	X	X	X	X		Universal	"Order Request" is displayed on UI.
>Scheduled Procedure Step Description	0040,0007	LO		X			X	Universal	
>Scheduled Protocol Code Sequence	0040,0008	SQ		X			X	Universal	
>Scheduled Procedure Step ID	0040,0009	SH		X	X			Universal	
>Scheduled Station Name	0040,0010	SH		X	X			Universal	
>Scheduled Procedure Step Location	0040,0011	SH		X	X			Universal	
>Scheduled Performing Physician's Name	0040,0006	PN	X	X				Universal	
>Scheduled Procedure Step Status	0040,0020	CS		X				Universal	

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
<b>Module: Requested Procedure Step Module (M)</b>									
Study Instance UID	0020,000D	UI		X			X	Universal	
Referenced Study Sequence	0008,1110	SQ		X				Universal	
>Referenced SOP Class UID	0008,1150	UI		X				Universal	
>Referenced SOP Instance UID	0008,1155	UI		X				Universal	
Requested Procedure Description	0032,1060	LO		X			X	Universal	
Requested Procedure Code Sequence	0032,1064	SQ		X			X	Universal	
>>Code Value	0008,0100	SH		X				Universal	
>>Coding Scheme Version	0008,0103	SH		X				Universal	
>> Coding Scheme Designator	0008,0102	SH		X				Universal	
>>Code Meaning	0008,0104	LO		X				Universal	
Requested Procedure ID	0040,1001	SH		X	X		X	Universal	
Requested Procedure Priority	0040,1003	SH		X	X			Universal	
Requested Procedure Location	0040,1005	LO		X	X			Universal	
Reason for the Requested Procedure	0040,1002	LO		X			X		
<b>Module: Imaging Service Request Module (M)</b>									
Accession Number	0008,0050	SH	X	X	X	X	X	Universal	"Order number" display in UI
Referring Physician's Name	0008,0090	PN		X	X		X	Universal	
Requesting Physician	0032,1032	PN		X				Universal	
<b>Module: Visit Identification Module (M)</b>									
Institution Name	0008,0080	LO		X	X		X	Universal	
Admission ID	0038,0010	LO		X	X		X	Universal	
<b>Module: Visit Status Module (M)</b>									
Current Patient Location	0038,0300	LO		X	X			Universal	
Patient Institution Residence	0038,0400	LO		X				Universal	
Visit Comments	0038,4000			X			X		
<b>Module : Patient Identification Module (M)</b>									
Patient's Name	0010,0010	PN	X	X	X	X	X	Universal	Values>64 characters are accepted by the system and these are copied into created DICOM IODs.
Patient ID	0010,0020	LO	X				X		
Other Patient IDs	0010,1000	LO		X				Universal	
<b>Module : Patient Demographic Module (M)</b>									
Patients Birth Date	0010,0030	DA		X	X	X	X	Universal	Date of birth of the named patient
Patient's Sex	0010,0040	CS		X	X	X	X	Universal	Sex of the named patient. Enumerated Values: M = male F = female O = other
Patient Size	0010,1020	DS		X			X	Universal	Patient's height or length in meters
Patient's Weight	0010,1030	DS		X			X	Universal	Weight of the patient in kilograms
Ethnic Group	0010,2160	SH		X			X	Universal	
<b>Module: Patient Medical Module (M)</b>									
Medical Alerts	0010,2000	LO		X				Universal	

Table 14: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	Matching responses display
Cancel		Unsuccessful operation	No matching responses display.
*	Any other status	Unsuccessful operation	No matching response display and reason logged.

## 4.2.2. MPPS AE

### 4.2.2.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 15: SOP Classes for MPPS AE**

SOP Class Name	SOP Class UID	SCU	SCP
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	Yes

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.2.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.2.2.1. General

The DICOM standard application context is specified below.

**Table 16: DICOM Application Context**

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

#### 4.2.2.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

**Table 17: Number of associations as an Association Initiator for this AE**

Description	Value
Maximum number of simultaneous associations	1

#### 4.2.2.2.3. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 18: DICOM Implementation Class and Version for MPPS AE**

Implementation Class UID	1.3.46.670589.32.860437.1.0.0
Implementation Version Name	TC35DCM_1_0_0

#### 4.2.2.2.4. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.



**Table 19: Communication Failure Behavior**

Exception	Behavior
Timeout	Association released gracefully and reason is logged.

### 4.2.2.3. Association Initiation Policy

The behavior of this Application Entity is summarized in the next Table.

**Table 20: Response Status Handler Behavior**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful Operation	Association established with the SCP system.
*	Any other status	Unsuccessful Operation	Association not established with the SCP System and reason is logged.

The Application Entity will respond to a received Association rejection as shown in the next table.

**Table 21: Association Rejection response**

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	The user is informed. Details are logged in central log file.
		2 - application-context-name-not supported	The user is informed. Details are logged in central log file.
		3 - calling-AE-title-not-recognized	The user is informed. Details are logged in central log file.
		7 - called-AE-title-not-recognized	The user is informed. Details are logged in central log file.
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The user is informed. Details are logged in central log file.
		2 - protocol-version-not-supported	The user is informed. Details are logged in central log file.
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	The user is informed. Details are logged in central log file.
		2 - local-limit-exceeded	The user is informed. Details are logged in central log file.
	2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given
2 - application-context-name-not-supported			The user is informed. Details are logged in central log file.
3 - calling-AE-title-not-recognized			The user is informed. Details are logged in central log file.
7 - called-AE-title-not-recognized			The user is informed. Details are logged in central log file.
2 - DICOM UL service-provider (ACSE related function)		1 - no-reason-given	The user is informed. Details are logged in central log file.
		2 - protocol-version-not-supported	The user is informed. Details are logged in central log file.
3 - DICOM UL service-provider (Presentation related function)		1 - temporary-congestion	The user is informed. Details are logged in central log file.
		2 - local-limit-exceeded	The user is informed. Details are logged in central log file.

The behavior of the AE on receiving an Association abort is summarized in the next table.

**Table 22: Association Abort Handling**

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	When received, terminates the connection, and logs the event.
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	When received, terminates the connection, and logs the event.
	1 - unrecognized-PDU	When received, terminates the connection, and logs the event.
	2 - unexpected-PDU	When received, terminates the connection, and logs the event.
	4 - unrecognized-PDU-parameter	When received, terminates the connection, and logs the event.
	5 - unexpected-PDU-parameter	When received, terminates the connection, and logs the event.
	6 - invalid-PDU-parameter-value	When received, terminates the connection, and logs the event.

### 4.2.2.3.1. (Real-World) Activity – Modality Performed Procedure Step as SCU

When PageWriter start the scan of an examination, an association is established with the SCP and send a N-CREATE message with all appropriate information about the examination on the PageWriter scanner; the status will be set to IN-PROGRESS.

After clicking on the “Transfer” button the PageWriter will archive acquired images and send a N-SET message having status IN-PROGRESS and procedure end date and time information.

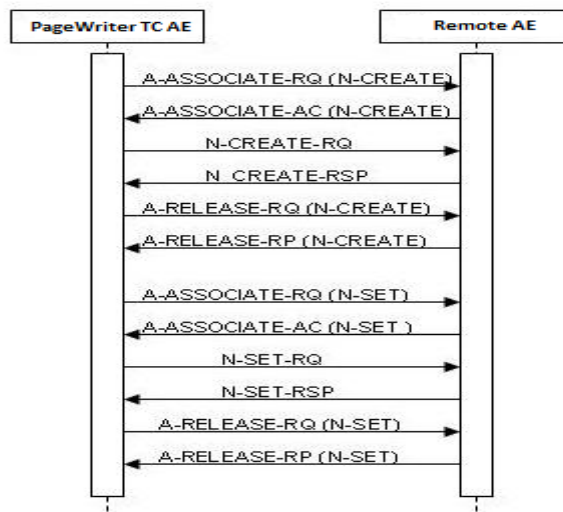
After clicking on the “End Session” button PageWriter send a N-SET message (having status “COMPLETED” and procedure end date and time information).

After starting the session, when the PageWriter end the session without acquiring image, then PageWriter send a N-SET message with status

or “DISCONTINUED”. The MPPS function is independent of the use of storage commitment.

The sequence diagram in figure 7 shows the interaction for the MR System RWA Report MPPS.

#### 4.2.2.3.1.1. Description and Sequencing of Activities



**Figure 4: (Real World) Activity - Modality Performed Procedure Step as SCU**

## Description of Activities

MPPS messages are only created for scheduled studies.

After the image for a Scheduled Procedure Step has been acquired, the system sets the MPPS status of the related examination to "IN PROGRESS" and generates an initial MPPS in progress message. The system does not generate intermediate MPPS in progress message for subsequent acquisitions of this Scheduled Procedure Step instance.

After finishing the appropriate acquisition(s), the system will change the MPPS status of the related examination to "COMPLETED" and generate and MPPS N-SET-FINAL message.

### 4.2.2.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

**Table 23: Proposed Presentation Contexts for (Real-World) Activity – Modality Performed Procedure Step As SCU**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

### 4.2.2.3.1.3. SOP Specific Conformance for Modality Performed Procedure Step SOP Class

When acquiring the first image of a Scheduled or Unscheduled Procedure Step, ECG PageWriter generates a MPPS IN PROGRESS message.

#### 4.2.2.3.1.3.1. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-CREATE-SCU

This section includes the dataset specific behavior, i.e., error codes, error and exception handling, time-outs, etc.

**Table 24: MPPS Request Identifiers for N-CREATE-RQ**

Attribute Name	Tag	VR	Value	Comment
<b>SOP Common Module</b>				
Specific Character Set	0008,0005	CS		Optional/Config
<b>Performed Procedure Step Relationship Module</b>				
Patient ID	0010,0020	LO		
Patient's Birth Date	0010,0030	DA		
Patient's Name	0010,0010	PN		
Patient's Sex	0010,0040	CS		
Patient Age	0010,1010	AS		
Ethnic Group	0010,2160	SH		
Other Patient ID	0010,1000	LO		
Referenced Patient Sequence	0008,1120	SQ		

Attribute Name	Tag	VR	Value	Comment
> Referenced SOP Class UID	0008,1150	UI		
> Referenced SOP Instance UID	0008,1155	UI		
Scheduled Step Attributes Sequence	0040,0270	SQ		
>Accession Number	0008,0050	SH		
>Requested Procedure Description	0032,1060	LO		
>Requested Procedure ID	0040,1001	SH		
>Requested Procedure Code Sequence	0032,1064	SQ		
>Scheduled Procedure Step Description	0040,0007	LO		
>Study Instance UID	0020,000D	UI		
>Referenced Study Sequence	0008,1110	SQ		
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
>Scheduled Protocol Code Sequence	0040,0008	SQ		
>>Code Meaning	0008,0104	LO		
>>Code Value	0008,0100	SH		
>>Coding Scheme Designator	0008,0102	SH		
>Scheduled Procedure Step ID	0040,0009	SH		
<b>Performed Procedure Step Information Module</b>				
Performed Location	0040,0243	SH		
Performed Procedure Step ID	0040,0253	SH		
Performed Procedure Step Description	0040,0254	LO		
Performed Procedure Step Start Date	0040,0244	DA		
Performed Procedure Step Start Time	0040,0245	TM		
Performed Procedure Step End Date	0040,0250	DA		
Performed Procedure Step End Time	0040,0251	TM		
Performed Procedure Step Status	0040,0252	CS	IN PROGRESS	
Performed Procedure Type Description	0040,0255	LO		
Performed Station AE Title	0040,0241	AE	PageWriter AE Title	
Performed Station Name	0040,0242	SH		
Procedure Code Sequence	0008,1032	SQ		
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
<b>Image Acquisition Results Module</b>				
Modality	0008,0060	CS	"ECG"	
Study ID	0020,0010	SH		
Performed Protocol Code Sequence	0040,0260	SQ		
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
Performed Series Sequence	0040,0340	SQ		
>Retrieve AE Title	0008,0054	AE		
>Series Description	0008,103E	LO		
>Performing Physician's Name	0008,1050	PN		
>Operator's Name	0008,1070	PN		
>Referenced Image Sequence	0008,1140	SQ		
>> Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
>Protocol Name	0018,1030	LO		

Attribute Name	Tag	VR	Value	Comment
>Series Instance UID	0020,000E	UI		
> Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		
>> Referenced SOP Class UID	0008,1150	UI		
>> Referenced SOP Instance UID	0008,1155	UI		

This part of the section includes the dataset specific behavior, i.e., error codes, error and exception handling, time-outs, etc.

**Table 25: Status Response**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	Operation completed successfully.
*	Any other status	Unsuccessful operation	Operation not completed, and failure reason is logged.

**Table 26: DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Association released gracefully and reason is logged.

## 4.2.2.3.1.3.2. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-SET-SCU

This section includes the dataset specific behavior, i.e., error codes, error and exception handling, time-outs, etc.

**Table 27: MPPS Request Identifiers for N-SET-RQ**

Attribute Name	Tag	VR	Value	Comment
<b>SOP Common Module</b>				
Specific Character Set	0008,0005	CS		Optional/Config
<b>Performed Procedure Step Information Module</b>				
Performed Procedure Step End Date	0040,0250	DA		End of the examination
Performed Procedure Step End Time	0040,0251	TM		End of the examination
Performed Procedure Step Status	0040,0252	CS		IN PROGRESS or DISCONTINUE or COMPLETED
Procedure Code Sequence	0008,1032	SQ		
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
<b>Image Acquisition Results Module</b>				
Performed Protocol Code Sequence	0040,0260	SQ		
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
Performed Series Sequence	0040,0340	SQ		
>Retrieve AE Title	0008,0054	AE		
>Series Description	0008,103E	LO		
>Performing Physician's Name	0008,1050	PN		
>Operator's Name	0008,1070	PN		

Attribute Name	Tag	VR	Value	Comment
>Protocol Name	0018,1030	LO		
>Series Instance UID	0020,000E	UI		
> Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		
>> Referenced SOP Class UID	0008,1150	UI		
>> Referenced SOP Instance UID	0008,1155	UI		

This part of the section includes the dataset specific behavior, i.e., error codes, error and exception handling, time-outs, etc.

**Table 28: Status Response**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	Operation completed successfully.
*	Any other status	Unsuccessful operation	Operation not completed, and failure reason is logged.

**Table 29: DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Association released gracefully and reason is logged.

## 4.2.3. Storage AE

Detail of this specific Application Entity is specified in this section.

### 4.2.3.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 30: SOP Classes for Storage AE**

SOP Class Name	SOP Class UID	SCU	SCP
12-Lead ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	No
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	No
Encapsulated PDF Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1	Yes	No

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.3.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.3.2.1. General

The DICOM standard application context is specified below.

**Table 31: DICOM Application Context**

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

## 4.2.3.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator is specified here.

**Table 32: Number of associations as an Association Initiator for this AE**

Description	Value
Maximum number of simultaneous associations	1

## 4.2.3.2.3. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 33: DICOM Implementation Class and Version for Storage AE**

Implementation Class UID	1.3.46.670589.32.860437.1.0.0
Implementation Version Name	TC35DCM_1_0_0

## 4.2.3.2.4. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 34: Communication Failure Behavior**

Exception	Behavior
Timeout	Association released gracefully and reason is logged.

## 4.2.3.3. Association Initiation Policy

The behavior of this Application Entity is summarized in the next Table.

**Table 35: Response Status Handler Behavior**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful Operation	Association established with the SCP system.
*	Any other status	Unsuccessful Operation	Association not established with the SCP System and reason is logged.

The Application Entity will respond to a received Association rejection as shown in the next table.

**Table 36: Association Rejection response**

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - application-context-name-not supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		3 - calling-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		7 - called-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".

Result	Source	Reason/Diagnosis	Behavior
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - local-limit-exceeded	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - application-context-name-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		3 - calling-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		7 - called-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - local-limit-exceeded	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".

The behavior of the AE on receiving an Association abort is summarized in the next table.

**Table 37: Association Abort Handling**

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	1 - unrecognized-PDU	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	2 - unexpected-PDU	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	4 - unrecognized-PDU-parameter	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	5 - unexpected-PDU-parameter	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	6 - invalid-PDU-parameter-value	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"



## 4.2.3.3.1. (Real-World) Activity – Image Export

### 4.2.3.3.1.1. Description and Sequencing of Activities

After generating an ECG, PageWriter TC35 will initiate transmission of the ECG. This causes the PageWriter TC35 to store the ECG into the configured Storage SCP. ECGs are stored using the 12-Lead ECG Waveform Object or as a General ECG Waveform Object or as Encapsulated PDF Storage Object depending on the configuration settings.

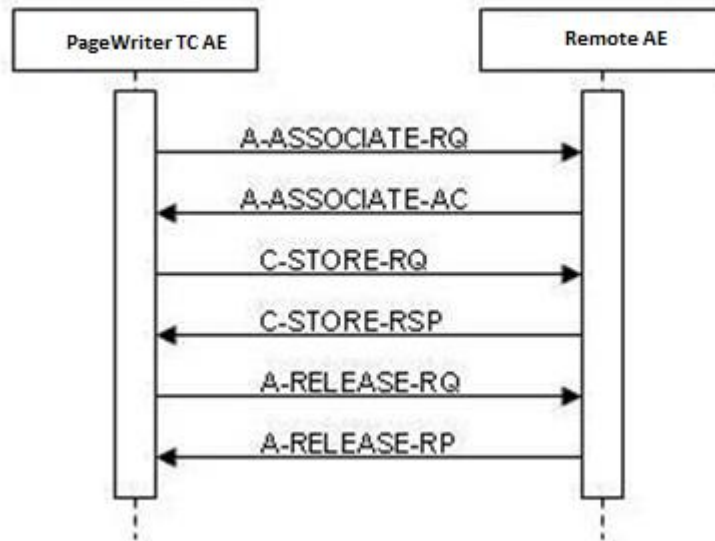


Figure 5: Image Export

### 4.2.3.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 38: Proposed Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
12-Lead ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Encapsulated PDF Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

### 4.2.3.3.1.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

#### 4.2.3.3.1.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.

This includes the dataset specific behavior, i.e., error codes, error and exception handling, time-outs, etc.

**Table 39: Status Response**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	Store operation completed successfully.
*	Any other status	Unsuccessful operation	Store operation not completed, and reason is logged.

## 4.2.4. Storage Commitment AE

### 4.2.4.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 40: SOP Classes for Storage AE**

SOP Class Name	SOP Class UID	SCU	SCP
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

### 4.2.4.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.4.2.1. General

The DICOM standard application context is specified below.

**Table 41: DICOM Application Context**

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

#### 4.2.4.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator is specified here.

**Table 42: Number of associations as an Association Initiator for this AE**

Description	Value
Maximum number of simultaneous associations	1

#### 4.2.4.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

**Table 43: Asynchronous nature as an Association Initiator for this AE**

Description	Value
Maximum number of outstanding asynchronous transactions	1

## 4.2.4.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

**Table 44: DICOM Implementation Class and Version for Storage AE**

Implementation Class UID	1.3.46.670589.32.860437.1.0.0
Implementation Version Name	TC35DCM_1_0_0

## 4.2.4.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 45: Communication Failure Behavior**

Exception	Behavior
Timeout	Association released gracefully and reason is logged.

## 4.2.4.3. Association Initiation Policy

The behavior of this Application Entity is summarized in the next Table.

**Table 46: Response Status Handler Behavior**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful Operation	Association established with the SCP system.
*	Any other status	Unsuccessful Operation	Association not established with the SCP System and reason is logged.

The Application Entity will respond to a received Association rejection as shown in the next table.

**Table 47: Association Rejection response**

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - application-context-name-not supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		3 - calling-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		7 - called-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".	
	2 - local-limit-exceeded	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - application-context-name-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".

Result	Source	Reason/Diagnosis	Behavior
		3 - calling-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		7 - called-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - local-limit-exceeded	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".

The behavior of the AE on receiving an Association abort is summarized in the next table.

**Table 48: Association Abort Handling**

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	1 - unrecognized-PDU	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	2 - unexpected-PDU	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	4 - unrecognized-PDU-parameter	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	5 - unexpected-PDU-parameter	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"
	6 - invalid-PDU-parameter-value	On receiving Abort, ECG PageWriter displays "Remote Transfer Error"

## 4.2.4.3.1. (Real-World) Activity – Storage Commitment

### 4.2.4.3.1.1. Description and Sequencing of Activities

After generating an ECG, PageWriter TC35 will initiate transmission of the ECG. This causes the PageWriter TC35 to store the ECG into the configured Storage SCP. ECGs are stored using the 12-Lead ECG Waveform Object or as a General ECG Waveform Object or as Encapsulated PDF Storage Object depending on the configuration settings.

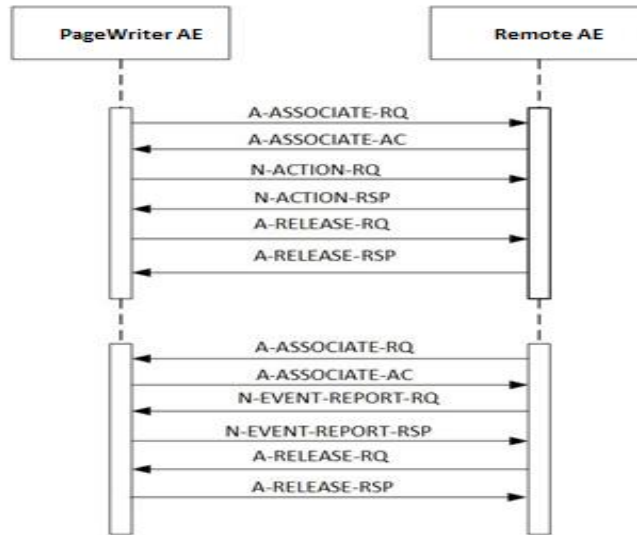


Figure 6: (Real World) Activity - Storage Commitment Push Model as SCU (asynchronous)

Archive means that PageWriter TC35 stores images with Storage Commitment.

The PageWriter TC35 will request an association with the remote Storage SCP for the applicable Storage SOP classes. After accepting the association, the PageWriter TC35 will send the store request, wait for response, and then release the association. The store response status may be inspected on the UI. The Transferred image shall not be deleted from the system until the Storage Commit N-EVENT is received.

Depending on the status of the store the PageWriter TC35 may queue store requests for retries. The queued store requests can be cancelled from the UI.

When an archive supports DICOM Storage Commitment, this node can be configured for it. For each image that is sent to this node, also a Storage Commitment Request is sent. The image is delete-protected until the Storage Commit Response has been received. The current status is shown in the Image Info Panel.

### 4.2.4.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 49: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model as SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

### 4.2.4.3.1.3. SOP Specific Conformance for Storage Commitment Push Model SOP Class

This section includes the SOP specific behavior, i.e., error codes, error and exception handling, time-outs, etc. Behavior of an Application Entity SOP class is summarized as shown in next Table. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

#### 4.2.4.3.1.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

**Table 50: N-ACTION-RQ Dataset Specification.**

Storage Commitment Push Model SOP Class			
Attribute Name	Tag	VR	Comment
<b>Storage Commitment Module</b>			
Transaction UID	0008,1195	UI	
Referenced SOP Sequence	0008,1199	SQ	
>Referenced SOP Class UID	0008,1150	UI	
>Referenced SOP Instance UID	0008,1155	UI	

This part of the section includes the dataset specific behavior, i.e., error codes, error and exception handling, time-outs, etc.

**Table 51: Storage Commitment N-EVENT-REPORT Response Status Handling Behavior**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	Storage Commitment (N-ACTION) operation completed successfully.
*	Any other status	Unsuccessful operation	Storage Commitment (N-ACTION) not completed, and reason is logged.

#### 4.2.4.3.1.3.2. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCP

The details regarding the response behaviour to status codes are provided in Table 40.

**Table 52: Storage Commitment N-EVENT-REPORT Response Status Handling Behavior**

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	Storage Commitment ((N-EVENT-REPORT) operation completed successfully.
*	Any other status		reason is logged.

Event Type	Event Type ID	Behavior
Storage Commitment Request Successful	1	The Examination is marked as completed and it becomes a candidate for an automatic deletion from the local database if local resources become scarce.
Storage Commitment Request Complete - Failures Exist	2	The failure is reported to the operator by not marking the examination as completed. The operator may re-transfer the image data (which was previously transferred to the Image Archive).

## 4.2.4.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

**Table 53: Association Reject Reasons**

Result	Source	Reason/Diagnosis	Behavior
1 - rejected permanent	1 - DICOM UL service-user	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - application-context-name-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		3 - calling-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		7 - called-AE-title-not-recognized	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - local-limit-exceeded	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
	2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given
2 - application-context-name-not-supported			When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
3 - calling-AE-title-not-recognized			When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
7 - called-AE-title-not-recognized			When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
2 - DICOM UL service provider (ACSE related function)		1 - no-reason-given	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - protocol-version-not-supported	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
3 - DICOM UL service provider (Presentation related function)		1 - temporary-congestion	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".
		2 - local-limit-exceeded	When association rejection occurs, ECG PageWriter displays "Remote Transfer Error".

The behavior of the AE for sending an Association abort is summarized in next table.

**Table 54: Association Abort Policies**

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	On receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	1 - unrecognized-PDU	receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	2 - unexpected-PDU	receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	4 - unrecognized-PDU parameter	receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	5 - unexpected-PDU parameter	receiving Abort request, ECG PageWriter displays "Remote Transfer Error".
	6 - invalid-PDU-parameter value	receiving Abort request, ECG PageWriter displays "Remote Transfer Error".



## 4.3. Network Interfaces

### 4.3.1. Physical Network Interfaces

PageWriter TC35s support a single network interface. The physical network interface depends on the host server on which the PageWriter TC35 is installed.

### 4.3.2. Additional Protocols

The System does not support additional protocols.

## 4.4. Configuration

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration are addressed in this section.

### 4.4.1. AE Title/Presentation Address Mapping

An important installation issue is the translation from AE title to presentation address. How this is to be performed is described here.

#### 4.4.1.1. Local AE Titles

The AE Titles and TCP/IP Ports configured from the PageWriter TC35 Configuration GUI. Every DICOM service can use different AE Title.

#### 4.4.1.2. Remote AE Title/Presentation Address Mapping

The AE Title, host names and port numbers of remote applications are configured using the PageWriter TC35 Configuration GUI.

### 4.4.2. Parameters

A number of parameters related to general operation can be configured using the PageWriter TC35 Configuration GUI. The table below only shows those configuration parameters relevant to DICOM communications, grouped according the specific PageWriter TC35 application. See the PageWriter TC35 Manual on the application for details on general configuration capabilities.

The PageWriter TC35 supports the following configuration parameters:

**Table 55: PageWriter TC35 Parameters**

Parameter Description	Configurable(Yes/No)	Default Value
SOP Class	Yes	"Based on Lead Count", which means 12-Lead ECG Waveform for ECGs with only 12 leads, and General ECG Waveform for ECGs with more than 12 leads*
PDU Length	No	16384

\* When the TC35 creates a report with more than 13 leads, the DICOM object created contains more than 13 leads ECG data. The attribute Number of Waveform Channels (003A, 0005) will has a value more than 13.

**Table 56: PageWriter TC35 Parameters (SCU Worklist Retrieval Settings-Remote System Information for C-FIND)**

Parameter Description	Configurable(Yes/No)	Default Value
AE Title	Yes	-
Host Address	Yes	-
Host Port	Yes	-

**Table 57: PageWriter TC35 Parameters (SCU Record Storage Settings - Remote System Information for C-STORE)**

Parameter Description	Configurable(Yes/No)	Default Value
AE Title	Yes	-
Host Address	Yes	-
Host Port	Yes	-

## 5. Media Interchange

The System does not support DICOM Media storage.

## 6. Supports of Character Sets

Any support for character sets in Network and Media services is described here.

**Table 58: Supported DICOM Character Sets**

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
Latin alphabet No. 1	ISO_IR 100	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 100	G1	Supplementary set of ISO 8859

## 7. Security

### 7.1. Security Profiles

#### 7.1.1. Security use Profiles

The System does not support security use profiles.

#### 7.1.2. Security Transport Connection Profiles

The System does not support Security Transport Connection profiles.

#### 7.1.3. Digital Signature Profiles

The System does not support Digital Signature profiles.

#### 7.1.4. Media Storage Security Profiles

The System does not support Media Storage Security profiles.

#### 7.1.5. Attribute Confidentiality Profiles

The System does not support Attribute Confidentiality profiles.

#### 7.1.6. Network Address Management Profiles

The System does not support Network Address Management profiles.

#### 7.1.7. Time Synchronization Profiles

PageWriter TC35 conforms to the IHE Consistent Time Profile. It is possible to synchronize time with the NTP Timeserver using serviceability. The NTP Timeserver is an element of Hospital Infrastructure.

#### 7.1.8. Application Configuration Management Profiles

The System does not support Application Configuration Management profiles.

#### 7.1.9. Audit Trail Profiles

The System does not support Audit Trail profiles.

### 7.2. Association Level Security

The System does not support Association Level Security profiles.

### 7.3. Application Level Security

The System does not support Application Level Security profiles.

## 8. Annexes of application PageWriter TC35

### 8.1. IOD Contents

#### 8.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

ALWAYS            The module is always present  
 CONDITIONAL    The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS            The attribute is always present with a value  
 EMPTY            The attribute is always present without any value (attribute sent zero length)  
 VNAP             The attribute is always present and its Value is Not Always Present  
 (attribute sent zero length if no value is present)  
 ANAP             The attribute is present under specified condition – if present then it will always have a value

The abbreviations used in the Module table for the column "Source" are:

AUTO              The attribute value is generated automatically  
 CONFIG          The attribute value source is a configurable parameter  
 COPY             The attribute value source is another SOP instance  
 FIXED            The attribute value is hard-coded in the application  
 IMPLICIT        The attribute value source is a user-implicit setting  
 MPPS            The attribute value is the same as that use for Modality Performed Procedure Step  
 MWL             The attribute value source is a Modality Worklist  
 USER            The attribute value source is explicit user input

##### 8.1.1.1. List of created SOP Classes

**Table 59: List of created SOP Classes**

SOP Class Name	SOP Class UID
12-Lead ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2
Encapsulated PDF Report Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1

## 8.1.1.2. 12-Lead ECG Waveform Storage SOP Class

**Table 60: IOD of Created 12-Lead ECG Waveform Storage SOP Class Instances**

Information Entity	Module	Presence Of Module	Presence Of Module
Patient	Patient Module	ALWAYS	
Study	General Study Module	ALWAYS	
Study	Patient Study Module	ALWAYS	
Series	General Series Module	ALWAYS	
Equipment	General Equipment Module	ALWAYS	
Waveform	Acquisition Context Module	ALWAYS	
Waveform	Waveform Identification Module	ALWAYS	
Waveform	Waveform Module	ALWAYS	
Waveform	SOP Common Module	ALWAYS	

**Table 61: Patient Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	MWL	Patient's full name. (Patient First Name/Last Name)
Patient ID	0010,0020	LO		VNAP	MWL	Primary hospital identification number or code for the patient. (Patient ID)
Patient's Birth Date	0010,0030	DA		VNAP	MWL	Birth date of the patient. (DateOfBirth)
Patient's Sex	0010,0040	CS		VNAP	MWL	Sex of the named patient. Enumerated Values: "M" = male
Ethnic Group	0010,2160	SH		ANAP	MWL	Ethnic group or race of the patient. (Race)
Other Patient IDs	0010,1000	LO		ANAP	MWL	

**Table 62: General Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	AUTO	Date the Study started (Acquisition Date – output only)
Study Time	0008,0030	TM		VNAP	AUTO	Time the Study started (Acquisition Time – output only)
Accession Number	0008,0050	SH		VNAP	MWL	A number that identifies the order for the study (Order Number)
Referring Physician's Name	0008,0090	PN		VNAP	MWL	Name of the patient's referring physician. (Referring Doctor Name)
Study Description	0008,1030	LO		ANAP	MWL	Institution-generated description or classification of the Study (component) performed. (Test Reason)
Study Instance UID	0020,000D	UI		ALWAYS	MWL	Unique identifier for the Study. For MWL, or generated by PageWriter TC35 using: DECG prefix: 1.3.46.670589.32 Time Clock Random Number
Study ID	0020,0010	SH		VNAP	MWL	User or equipment generated Study identifier. For output this will be blank.

**Table 63: Patient Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		VNAP	USER	Age of the Patient. (Age)
Patient's Size	0010,1020	DS		VNAP	USER	Length or size of the Patient, in meters. (Height)
Patient's Weight	0010,1030	DS		VNAP	USER	Weight of the Patient, in kilograms. (Weight)
Admission ID	0038,0010	LO		ANAP	MWL	Identification number of the visit as assigned by the healthcare provider.

**Table 64: General Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	"ECG"	ALWAYS	FIXED	Type of equipment that originally acquired the data used to create the images in this Series. For output this will always be "ECG".
Operators' Name	0008,1070	PN		ANAP	USER	Name(s) of the operator(s) supporting the Series. (Technician Name)
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	Unique identifier for the Series. PageWriter TC35 will generate this as: DECG prefix: 1.3.46.670589.32 Time Clock Random Number Suffix: 1
Series Number	0020,0011	IS		VNAP	MWL	A number that identifies this Series. For output this will be blank

**Table 65: General Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	FIXED	
Institution Name	0008,0080	LO	If the institution name in MWL is empty, the local institution name is used.	ANAP	MWL, USER	Institution where the equipment that produced the composite instances is located. (Institution Name)
Station Name	0008,1010	SH	Value is empty	ANAP	CONFIG	User defined name identifying the machine that produced the composite instances (Cart ID)
Institutional Department Name	0008,1040	LO		ANAP	USER	Department in the institution where the equipment that produced the composite instances is located. (Department Name)
Manufacturer's Model Name	0008,1090	LO	According to different TC type. 80315 (TC70) 80310 (TC50) 80306 (TC30/20)	ANAP	FIXED	Manufacturer's model name of the equipment that produced the composite instances (Cart Model)
Software Version(s)	0018,1020	LO	A.06.04.03	ANAP	AUTO	Manufacturer's designation of software version of the equipment that produced the composite instances. (Cart Version)

**Table 66: Acquisition Context Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ		VNAP	AUTO	A sequence of items that describes the conditions present during the acquisition of the data of the SOP instance. Zero or more items may be included in this sequence.
>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "CODE".
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	A concept that constrains the meaning of (i.e. defines the role of) observation value.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "5.4.5-33-1-1" which means "Standard 12-lead electrode placement: limb leads placed at extremities"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SCPECG"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.3"
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Electrode Placement"
>Concept Code Sequence	0040,A168	SQ		ALWAYS	CONFIG	This is the Value component of a Name/Value pair when the Concept implied by Concept Name Code Sequence (0040,A043) is a Coded Value.
>>Code Value	0008,0100	SH		ANAP	CONFIG	This will be "5.4.5-33-1-1" which means "Standard 12-lead positions: limb leads placed at extremities"
>>Coding Scheme Designator	0008,0102	SH		ANAP	CONFIG	This will be "SCPECG"
>>Coding Scheme Version	0008,0103	SH		ANAP	CONFIG	This will be "1.3"
>>Code Meaning	0008,0104	LO		ANAP	CONFIG	This will be "Standard 12-Lead Positions"
>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "NUMERIC".
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	A concept that constrains the meaning of (i.e. defines the role of) observation value.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "F-008EC" which means "Systolic Blood Pressure"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be " SRT "
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be ""
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Systolic Blood Pressure"
>Measurement Units Code Sequence	0040,08EA	SQ		ALWAYS	FIXED	Units of measurement. Only a single Item shall be included in this Sequence. Required if Numeric Value (0040,A30A) is sent. Shall not be present otherwise.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "mmHg" which means "millimeters Hg"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "UCUM"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.4"
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "millimeters Hg"
>Numeric Value	0040,A30A	DS		VNAP	MWL	This will be the systolic BP value.
>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "NUMERIC".



>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	A concept that constrains the meaning of (i.e. defines the role of) observation value.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "F-008ED" which means "Diastolic Blood Pressure"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SRT"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be ""
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Diastolic Blood Pressure"
>Measurement Units Code Sequence	0040,08EA	SQ		ALWAYS	FIXED	Units of measurement. Only a single Item shall be included in this Sequence. Required if Numeric Value (0040,A30A) is sent. Shall not be present otherwise.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "mmHg" which means "millimeters Hg"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "UCUM"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.4"
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "millimeters Hg"
>Numeric Value	0040,A30A	DS		VNAP	MWL	This will be the distolic BP value.
>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "TEXT".
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	A concept that constrains the meaning of (i.e. defines the role of) observation value.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "G-02D0" which means "Regular Medication"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SRT"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be ""
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Regular Medication"
>Text Value	0040,160	UT		VNAP	MWL,US ER	This will be the medication.

**Table 67: Waveform Identification Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	The date the waveform data was created
Acquisition Datetime	0008,002A	DT		ALWAYS	AUTO	The date and time that the acquisition of data that resulted in this waveform. (Acquisition Date/Time)
Content Time	0008,0033	TM		ALWAYS	AUTO	The time the Waveform data was created
Instance Number	0020,0013	IS		ALWAYS	FIXED	A number that identifies this waveform. For output this will always be "1".

**Table 68: Waveform Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Waveform Sequence	5400,0100	SQ		ALWAYS	AUTO	Sequence of one or more Items, each representing one waveform multiplex group
> Multiplex Group Time Offset	0018,1068	DS		ALWAYS	AUTO	
>Trigger Time Offset	0018,1069	DS		ALWAYS	AUTO	

>Waveform Originality	003A,0004	CS		ALWAYS	FIXED	This will be "ORIGINAL" for the rhythm data and "DERIVED" for median data.
>Number of Waveform Channels	003A,0005	US		ALWAYS	CONFIG	Number of channels for this multiplex group
>Number of Waveform Samples	003A,0010	UL		ALWAYS	AUTO	Number of samples per channel in this multiplex group. (Lead Sample Count / Median Sample Count)
>Sampling Frequency	003A,001A	DS		ALWAYS	AUTO	Frequency in Hz
>Multiplex Group Label	003A,0020	SH		ANAP	FIXED	This is "RHYTHM" for the first group and "MEDIAN BEAT" for the second group.
>Channel Definition Sequence	003A,0200	SQ		ALWAYS	AUTO	Sequence of one or more Items, with one Item per channel.
>>Channel Source Sequence	003A,0208	SQ		ALWAYS	AUTO	Sequence of one or more Items which further qualify the Waveform Source.
>>>Code Value	0008,0100	SH		ANAP	AUTO	This is the code for the lead
>>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SCPECG"
>>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.3"
>>>Code Meaning	0008,0104	LO		ANAP	AUTO	This is the lead name.
>>Channel Sensitivity	003A,0210	DS		ANAP	FIXED	Nominal numeric value of unit quantity of sample
>>Channel Sensitivity Units Sequence	003A,0211	SQ		ANAP	FIXED	A coded descriptor of the Units of measure for the Channel Sensitivity
>>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "uV"
>>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "UCUM"
>>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.4"
>>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "microvolt"
>>Channel Sensitivity Correction Factor	003A,0212	DS		ANAP	FIXED	Multiplier to be applied to encoded sample values to match units specified in Channel Sensitivity (003A,0210).
>>Channel Baseline	003A,0213	DS		ANAP	FIXED	Offset of encoded sample value 0 from actual 0 using the units defined in the Channel Sensitivity Units Sequence (003A,0211). This will be "0".
>>Channel Sample Skew	003A,0215	DS		ANAP	FIXED	Offset of first sample of channel from waveform multiplex group start time, in samples. This will be "0".
>>Waveform Bits Stored	003A,021A	US		ALWAYS	AUTO	Number of significant bits within the waveform samples. This will be "16".
>>Filter Low Frequency	003A,0220	DS		ANAP	CONFIG	Nominal 3dB point of lower frequency of pass band
>>Filter High Frequency	003A,0221	DS		ANAP	CONFIG	Nominal 3dB point of higher frequency of pass band
>>Notch Filter Frequency	003A,0222	DS		ANAP	CONFIG	Center frequency of notch filter(s)
>Waveform Bits Allocated	5400,1004	US		ALWAYS	AUTO	Size of each waveform data sample within the waveform data. This will be "16".
>Waveform Sample Interpretation	5400,1006	CS		ALWAYS	FIXED	Data representation of the waveform data points. This will be "SS".
>Waveform Data	5400,1010	O W/ OB		ALWAYS	AUTO	Encoded data samples - channel multiplexed

**Table 69: SOP Common Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	"ISO-IR-100"	ALWAYS	CONFIG	
Instance Creation Date	0008,0012	DA		ANAP	AUTO	
Instance Creation Time	0008,0013	TM		ANAP	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.9.1.1	ALWAYS	AUTO	Uniquely identifies the SOP Class. This will be the 12- Lead ECG SOP Class "1.2.840.10008.5.1.4.1.1.9.1.1" or it will be the General ECG SOP Class "1.2.840.10008.5.1.4.1.1.9.1.2" depending on the configuration settings.
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	Uniquely identifies the SOP Instance. PageWriter TC35 will generate this as: DECG prefix: 1.3.46.670589.32 Time Clock Random Number Suffix: 1
Instance Number	0020,0013	IS		ANAP	AUTO	

**Table 70: Additional Attributes Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Visit Comments	0038,4000	LT		ANAP	User	User-defined comments about the visit
Reason for the Requested Procedure	0040,1002	LO		ANAP	User	Reason for requesting this imaging procedure
Performed Procedure Code Sequence	0040,A372	SQ		ANAP	User	
>Code Value	0008,0100	SH		ANAP	User	
>Coding Scheme Designator	0008,0102	SH		ANAP	User	
>Code Meaning	0008,0104	SH		ANAP	User	

### 8.1.1.3. General ECG Waveform Storage SOP Class

**Table 71: IOD of Created General ECG Waveform Storage SOP Class Instances**

Information Entity	Module	Presence Of Module	Condition
Patient	Patient Module	ALWAYS	
Study	General Study Module	ALWAYS	
Study	Patient Study Module	ALWAYS	
Series	General Series Module	ALWAYS	
Equipment	General Equipment Module	ALWAYS	
Waveform	Acquisition Context Module	ALWAYS	
Waveform	Waveform Identification Module	ALWAYS	
Waveform	Waveform Module	ALWAYS	
Waveform	SOP Common Module	ALWAYS	

**Table 72: Patient Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	MWL	Patient's full name. (Patient First Name/Last Name)
Patient ID	0010,0020	LO		VNAP	MWL	Primary hospital identification number or code for the patient.
Patient's Birth Date	0010,0030	DA		VNAP	MWL	Birth date of the patient
Patient's Sex	0010,0040	CS		VNAP	MWL	"M" = male
Ethnic Group	0010,2160	SH		ANAP	MWL	Ethnic group or race of the patient.
Other Patient IDs	0010,1000	LO		ANAP	MWL	

**Table 73: General Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	AUTO	Date the Study started
Study Time	0008,0030	TM		VNAP	AUTO	Time the Study started
Accession Number	0008,0050	SH		VNAP	MWL	A number that identifies the order for the study
Referring Physician's Name	0008,0090	PN		VNAP	MWL	Name of the patient's referring physician
Study Description	0008,1030	LO		ANAP	MWL	Institution-generated description or classification of the Study (component) performed.
Study Instance UID	0020,000D	UI		ALWAYS	MWL	Unique identifier for the Study
Study ID	0020,0010	SH		VNAP	MWL	User or equipment generated Study identifier

**Table 74: Patient Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		VNAP	MWL	Age of the Patient
Patient's Size	0010,1020	DS		VNAP	MWL	Length or size of the Patient, in meters
Patient's Weight	0010,1030	DS		VNAP	MWL	Weight of the Patient, in kilograms. (Weight)
Admission ID	0038,0010	LO		ANAP	MWL	Identification number of the visit as assigned by the healthcare provider.

**Table 75: General Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	"ECG"	ALWAYS	FIXED	Type of equipment that originally acquired the data used to create the images in this Series. For output this will always be "ECG".
Operators' Name	0008,1070	PN		ANAP	USER	Name(s) of the operator(s) supporting the Series. (Technician Name)
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	Unique identifier for the Series
Series Number	0020,0011	IS		VNAP	MWL	A number that identifies this Series

**Table 76: General Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	FIXED	
Institution Name	0008,0080	LO	If the institution name in MWL is empty, the local institution name is used.	ANAP	MWL, USER	Institution where the equipment that produced the composite instances is located.
Station Name	0008,1010	SH	Value is empty	ANAP	CONFIG	User defined name identifying the machine that produced the composite instances
Institutional Department Name	0008,1040	LO		ANAP	USER	Department in the institution where the equipment that produced the composite instances is located
Manufacturer's Model Name	0008,1090	LO	According to different TC type. 80315 (TC70) 80310 (TC50) 80306 (TC30/20)	ANAP	FIXED	Manufacturer's model name of the equipment that produced the composite instances (Cart Model)
Software Version(s)	0018,1020	LO	A.06.04.03	ANAP	AUTO	Manufacturer's designation of software version of the equipment that produced the composite instances.

**Table 77: Acquisition Context Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ		VNAP	AUTO	A sequence of items that describes the conditions present during the acquisition of the data of the SOP instance. Zero or more items may be included in this sequence.
>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "CODE".
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	The "Name" component of the Name/Value pair. This sequence shall contain exactly one item.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "5.4.5-33-1"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SCPECG"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	is will be "1.3"
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Electrode Placement"
>Concept Code Sequence	0040,A168	SQ		ANAP	CONFIG	This is the Value component of a Name/Value pair when the Concept implied by Concept Name Code Sequence (0040,A043) is a Coded Value.
>>Code Value	0008,0100	SH		ANAP	CONFIG	This will be "5.4.5-33-1-1" which means "Standard 12-lead electrode placements: limb leads placed at extremities"
>>Coding Scheme Designator	0008,0102	SH		ANAP	CONFIG	"SCPECG"
>>Coding Scheme Version	0008,0103	SH		ANAP	CONFIG	This will be "1.3"
>>Code Meaning	0008,0104	LO		ANAP	CONFIG	This will be "Standard 12-Lead Positions"

>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "NUMERIC".
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	A concept that constrains the meaning of (i.e. defines the role of) observation value.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "F-008EC" which means "Systolic Blood Pressure"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be " SRT "
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be ""
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Systolic Blood Pressure"
>Measurement Units Code Sequence	0040,08EA	SQ		ALWAYS	FIXED	Units of measurement. Only a single Item shall be included in this Sequence. Required if Numeric Value (0040,A30A) is sent. Shall not be present otherwise.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "mmHg" which means "millimeters Hg"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "UCUM"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.4"
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "millimeters Hg"
>Numeric Value	0040,A30A	DS		VNAP	MWL	This will be the systolic BP value.
>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "NUMERIC".
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	A concept that constrains the meaning of (i.e. defines the role of) observation value.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "F-008ED" which means "Diastolic Blood Pressure"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SRT"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be ""
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Diastolic Blood Pressure"
>Measurement Units Code Sequence	0040,08EA	SQ		ALWAYS	FIXED	Units of measurement. Only a single Item shall be included in this Sequence. Required if Numeric Value (0040,A30A) is sent. Shall not be present otherwise.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "mmHg" which means "millimeters Hg"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "UCUM"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.4"
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "millimeters Hg"
>Numeric Value	0040,A30A	DS		VNAP	MWL	This will be the distolic BP value.
>Value Type	0040,A040	CS		VNAP	FIXED	The type of the value encoded in this item. This will be "TEXT".
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	FIXED	A concept that constrains the meaning of (i.e. defines the role of) observation value.
>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "G-02D0" which means "Regular Medication"
>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SRT"
>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be ""
>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "Regular Medication"
>Text Value	0040,160	UT		VNAP	MWL,USER	This will be the medication.

**Table 78: Waveform Identification Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	The date the waveform data was created.
Acquisition Datetime	0008,002A	DT		ALWAYS	AUTO	The date and time that the acquisition of data that resulted in this waveform.
Content Time	0008,0033	TM		ALWAYS	AUTO	The time the Waveform data was created.
Instance Number	0020,0013	IS		ALWAYS	FIXED	A number that identifies this waveform. For output this will always be "1".

**Table 79: Waveform Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Waveform Sequence	5400,0100	SQ		ALWAYS	AUTO	Sequence of one or more Items, each representing one waveform multiplex group. Ordering of Items in this Sequence is significant for external reference to specific multiplex groups. This will have 1 or 2 multiplex groups, one for rhythm data and one for median data
>Multiplex Group Time Offset	0018,1068	DS		ALWAYS	AUTO	
> Trigger Time Offset	0018,1069	DS		ALWAYS	AUTO	
>Waveform Originality	003A,0004	CS		ALWAYS	FIXED	This will be "ORIGINAL" for the rhythm data and "DERIVED" for median data.
>Number of Waveform Channels	003A,0005	US		ALWAYS	CONFIG	Number of channels for this multiplex group
>Number of Waveform Samples	003A,0010	UL		ALWAYS	AUTO	Number of samples per channel in this multiplex group
>Sampling Frequency	003A,001A	DS		ALWAYS	AUTO	Frequency in Hz.
>Multiplex Group Label	003A,0020	SH		ANAP	FIXED	Label for multiplex group. This is "RHYTHM" for the first group and "MEDIAN BEAT" for the second group.
>Channel Definition Sequence	003A,0200	SQ		ALWAYS	AUTO	Sequence of one or more Items, with one Item per channel. Ordering of Items in this Sequence is significant for reference to specific channels. There will be one item for each lead.
>>Channel Source Sequence	003A,0208	SQ		ALWAYS	AUTO	Sequence of one or more Items which further qualify the Waveform Source. This will have one item for each lead.
>>>Code Value	0008,0100	SH		ANAP	AUTO	This is the code for the lead
>>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "SCPECG"
>>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.3"
>>>Code Meaning	0008,0104	LO		ANAP	AUTO	This is the lead name.
>>Channel Sensitivity	003A,0210	DS		ANAP	FIXED	Nominal numeric value of unit quantity of sample. This is the LSB in microvolts and will always be 1.0.

>>Channel Sensitivity Units Sequence	003A,0211	SQ		ANAP	FIXED	A coded descriptor of the Units of measure for the Channel Sensitivity. Only a single Item shall be permitted in this sequence.
>>>Code Value	0008,0100	SH		ANAP	FIXED	This will be "uV"
>>>Coding Scheme Designator	0008,0102	SH		ANAP	FIXED	This will be "UCUM"
>>>Coding Scheme Version	0008,0103	SH		ANAP	FIXED	This will be "1.4"
>>>Code Meaning	0008,0104	LO		ANAP	FIXED	This will be "microvolt"
>>Channel Sensitivity Correction Factor	003A,0212	DS		ANAP	FIXED	Multiplier to be applied to encoded sample values to match units specified in Channel Sensitivity (003A,0210).
>>Channel Baseline	003A,0213	DS		ANAP	FIXED	Offset of encoded sample value 0 from actual 0 using the units defined in the Channel Sensitivity Units Sequence (003A,0211). This will be "0".
>>Channel Sample Skew	003A,0215	DS		ANAP	FIXED	Offset of first sample of channel from waveform multiplex group start time, in samples. This will be "0".
>>Waveform Bits Stored	003A,021A	US		ALWAYS	AUTO	Number of significant bits within the waveform samples. This will be "16".
>>Filter Low Frequency	003A,0220	DS		ANAP	CONFIG	Nominal 3dB point of lower frequency of pass band
>>Filter High Frequency	003A,0221	DS		ANAP	CONFIG	Nominal 3dB point of higher frequency of pass band
>>Notch Filter Frequency	003A,0222	DS		ANAP	CONFIG	Center frequency of notch filter(s)
>Waveform Bits Allocated	5400,1004	US		ALWAYS	AUTO	Size of each waveform data sample within the waveform data. This will be "16".
>Waveform Sample Interpretation	5400,1006	CS		ALWAYS	FIXED	Data representation of the waveform data points. This will be "SS".
>Waveform Data	5400,1010	O W/ OB		ALWAYS	AUTO	Encoded data samples - channel multiplexed.

**Table 80: SOP Common Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO-IR-100	ANAP	CONFIG	
Instance Creation Date	0008,0012	DA		ANAP	AUTO	
Instance Creation Time	0008,0013	TM		ANAP	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.9.1.2	ALWAYS	AUTO	This will be the 12- Lead ECG SOP Class "1.2.840.10008.5.1.4.1.1.9.1.1" or it will be the General ECG SOP Class "1.2.840.10008.5.1.4.1.1.9.1.2" depending on the configuration settings.
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	Uniquely identifies the SOP Instance.



**Table 81: Additional Attributes Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Visit Comments	0038,4000	LT		ANAP	User	User-defined comments about the visit
Reason for the Requested Procedure	0040,1002	LO		ANAP	User	Reason for requesting this imaging procedure
Other Patient IDs	0010,1000	LO		ANAP	User	
Performed Procedure Code Sequence	0040,A372	SQ		ANAP	User	
>Code Value	0008,0100	SH		ANAP	User	
>Coding Scheme Designator	0008,0102	SH		ANAP	User	
>Code Meaning	0008,0104	SH		ANAP	User	

## 8.1.1.4. Encapsulated PDF Storage SOP Class

**Table 82: IOD of Created Encapsulated PDF Storage SOP Class Instances**

**Table 83: SOP Class Modules**

Information Entity	Module	Presence	Condition
Patient	Patient Module	Always	
Study	General Study Module	Always	
Study	Patient Study Module	Conditional	
Series	Encapsulated Document Series Module	Always	
Equipment	General Equipment Module	Always	
Equipment	SC Equipment Module	Always	
Encapsulated Document	Encapsulated Document Module	Always	
Encapsulated Document	SOP Common Module	Always	

**Table 84: Patient Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	MWL, USER	
Patient ID	0010,0020	LO		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Birth Time	0010,0032	TM		ANAP	MWL	
Patient's Sex	0010,0040	CS		VNAP	MWL	
Ethnic Group	0010,2160	SH		ANAP	MWL	
Patient Comments	0010,4000	LT		ANAP	MWL	

**Table 85: General Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	AUTO, MWL	
Study Time	0008,0030	TM		VNAP	AUTO,	

					MWL	
Accession Number	0008,0050	SH		VNAP	AUTO, MWL	
Issuer of Accession Number Sequence	0008,0051	SQ		ANAP	AUTO, MWL	
Referring Physician's Name	0008,0090	PN		VNAP	MWL	
Study Description	0008,1030	LO		ANAP	AUTO, MWL	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		VNAP	AUTO, MWL	

**Table 86: Patient Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Admitting Diagnoses Description	0008,1080	LO		ANAP	AUTO	
Admitting Diagnoses Code Sequence	0008,1084	SQ		ANAP	AUTO	
Patient's Age	0010,1010	AS		ANAP	MWL, USER	
Patient's Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Occupation	0010,2180	SH		ANAP	MWL	
Additional Patient History	0010,21B0	LT		ANAP	AUTO	
Patient's Sex Neutered	0010,2203	CS		VNAP	AUTO	
Admission ID	0038,0010	LO		ANAP	AUTO, MWL	

**Table 87: Encapsulated Document Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ALWAYS	AUTO, MWL	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO	
Request Attributes Sequence	0040,0275	SQ		ANAP	AUTO	
Comments on the Performed Procedure Step	0040,0280	ST		ANAP	AUTO	

**Table 88: General Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical System	VNAP	AUTO	
Institution Name	0008,0080	LO		ANAP	AUTO, MWL	
Institution Address	0008,0081	ST		ANAP	AUTO, MWL	
Station Name	0008,1010	SH		ANAP	CONFIG	
Institutional Department Name	0008,1040	LO		ANAP	AUTO	
Manufacturer's Model Name	0008,1090	LO		ANAP	AUTO	

**Table 89: SC Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ANAP	AUTO, MWL	
Conversion Type	0008,0064	CS		ALWAYS	AUTO	

**Table 90: Encapsulated Document Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		VNAP	AUTO	
Acquisition DateTime	0008,002A	DT		VNAP	AUTO	
Content Time	0008,0033	TM		VNAP	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Image Laterality	0020,0062	CS		ANAP	AUTO	
Burned In Annotation	0028,0301	CS		ALWAYS	AUTO	
Concept Name Code Sequence	0040,A043	SQ		VNAP	AUTO	
Verification Flag	0040,A493	CS		ANAP	AUTO	
Document Title	0042,0010	ST		VNAP	AUTO	
Encapsulated Document	0042,0011	OB		ALWAYS	AUTO	
MIME Type of Encapsulated Document	0042,0012	LO		ALWAYS	AUTO	

**Table 91: SOP Common Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO-IR-100	ALWAYS	AUTO, USER	
Instance Creation Date	0008,0012	DA		ANAP	AUTO	
Instance Creation Time	0008,0013	TM		ANAP	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.104.1	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

## 8.1.2. Usage of Attributes from Received IOD

The System does not support received IOD.

## 8.1.3. Attribute Mapping

Modality Worklist	Image IOD	MPPS IOD (N-CREATE/NSET)
Admission ID	Admission ID	
Institution Name	Institution Name	
Patient's Size	Patient's Size	
Patient's Weight	Patient's Weight	
Referring Physician's Name	Referring Physician's Name	
Reason for the Requested Procedure	Reason for the Requested Procedure	
Visit Comments	Visit Comments	
Referenced Study Sequence		Referenced Study Sequence
Accession Number	Accession Number	Accession Number
Ethnic Group	Ethnic Group	Ethnic Group
Modality	Modality	Modality
Other Patient IDs	Other Patient IDs	Other Patient IDs
Patient's Name	Patient's Name	Patient's Name
Patient ID	Patient ID	Patient ID
Patient's Birth Date	Patient's Birth Date	Patient's Birth Date
Patient's Sex	Patient's Sex	Patient's Sex
Requested Procedure ID	Requested Procedure ID	Requested Procedure ID
Requested Procedure Description	Requested Procedure Description	Requested Procedure Description
Requested Procedure Code Sequence	Requested Procedure Code Sequence	Requested Procedure Code Sequence
Study Instance UID	Study Instance UID	Study Instance UID
Scheduled Procedure Step ID	Scheduled Procedure Step ID	Scheduled Procedure Step ID
Specific Character Set	Specific Character Set	Specific Character Set
Scheduled Procedure Step Description	Scheduled Procedure Step Description	Scheduled Procedure Step Description
Scheduled Protocol Code Sequence	Scheduled Protocol Code Sequence	Scheduled Protocol Code Sequence

## 8.1.4. Coerced/Modified fields

The System does not support 1.1.1. Coerced/Modified fields.

## 8.2. Data Dictionary of Private Attributes

The System does not support Data Dictionary of Private Attributes.

## 8.3. Coded Terminology and Templates

The System does not support Coded Terminology and Templates.

## 8.3.1. Context Groups

The System does not support Context Groups.

## 8.3.2. Template Specifications

The System does not support Template Specifications.

## 8.3.3. Private code definitions

The System does not support Private code definitions.

## 8.4. Grayscale Image consistency

The System does not support Grayscale Image consistency.

## 8.5. Standard Extended/Specialized/Private SOPs

The System does not support Standard Extended/Specialized/Private SOPs.

## 8.6. Private Transfer Syntaxes

The System does not support Private Transfer Syntaxes.

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